RK900-01 Automatic Weather Station is used for atmospheric temperature, relative humidity, atmospheric pressure,wind speed & direction,solar radiation,light,rainfall,soil temperature and humidity parameters measurement.The station consists of various types of sensors, LCD screen, meteorological data collector, chassis, support and other parts.It can be widely used in meteorology, hydrology, agriculture, forestry, scientific research and other fields.

FEATURES

- High accuracy
- Strong resistance to harsh environment
- Strong corrosion resistant ability
- Automatic storage and backup
- Convenient data download
- All-metal construction of bracket
- Solar power supply optional
- Free PC software

10m Supporting rod

2.5m Tripod

2.5m Tripod

10m Supporting rod

APPLICATIONS

- Agricultural
- Forestry
- Highways and railways
- Solar or wind power generation
- Greenhouse, breeding
- Scenic region
- Meteorological science research

COMPONENT PARTS

Parts	Details	Note
Data logger	Meteorological data collection, display, storage and communications	
Sensors & cable	Wind speed sensor, wind direction sensor, atmospheric temperature, atmospheric humidity, atmospheric pressure, rainfall, solar radiation, soil temperature, soil moisture,etc. (Optional according to user's requirements)	
Meteorological monitoring software	Use to real-time display, analysis and storage data on the PC	Attached
Multi-plate radiation shield	Used to install the atmospheric temperature, atmospheric humidity and atmospheric pressure sensors	
Tripod & accessories	Height: 2.5m typ.,304SS or Height: 10m(4m+3m+3m) steel with coating is optional other height is optional	
Protective box	Used to install data logger,solar charge controller and battery, stainless steel or steel with coating	
110VAC/220VAC adapter	Optional when using AC power supply	
RS232 cable	2m	
RS485 cable	2m	
USB to RS232 converter	Used to connect PC without RS232 serial port	
RS232-RS485 converter	Signal Conversion for RS485 and RS232	
U disk	Used for data storage	optional
GPRS module	Used for wireless data transmission, need to match with the local mobile communication network	optional
WIFI module	Used for wireless data transmission,need for wireless networking	optional
Ethernet module	Used for wireless data transmission,need for cable network	optional
LED screen	Size and display content can be customized	optional
Solar power supply system	Include photovoltaic panels(30W), solar charge controller, 25AH battery(Can't be transported by air. Suggest users to bring their own)	optional
Lightning protection device	Contain the lightning rod, connecting wires and grounding angle steel	optional
Windbreak wire	Used for fixing 10m support rod	
Base fixed steel cage	Used for fixing 10m support rod	

Note:10 m support is recommended for mountainous area or surrounding area with high buildings.

TYPICAL APPLICATION & TECHNICAL SPECIFICATION

- **General weather station**

Measure item	Measure range	Resolution	Accuracy
Wind speed	0-45m/s	0.1m/s	±（0.3±0.03V）m/s
Wind direction	0-360º	1°	±3°
Atmospheric temperature	-50-+100℃	0.1℃	±0.5℃
Atmospheric humidity	0-100%RH	0.1%RH	±3%
Atmospheric pressure	10-1100hPa	0.1hpa	±0.3hPa
Rainfall	0-8mm/min	0.2mm	±4%
Solar radiation	0-2000W/m^2	1W/m^2	±5%

- **Photovoltaic power generation weather station**

Measure item	Measure range	Resolution	Accuracy
Wind speed	0-45m/s	0.1m/s	±（0.3±0.03V）m/s
Wind direction	0-360º	1°	±3°
Atmospheric temperature	-50-+100℃	0.1℃	±0.5℃
Atmospheric humidity	0-100%RH	0.1%RH	±3%
Atmospheric pressure	10-1100hPa	0.1hpa	±0.3hPa
Photovoltaic panels temperature sensor	-50-+100℃	0.1℃	±0.5℃
Total solar radiation	0-2000W/m^2	1W/m^2	±3%
Rainfall(optional)	0-8mm/min	0.2mm	±4%
Hall current sensor(optional)	0-500V	1V	±0.5%
Hall voltage sensor(optional)	0-150A	0.1A	±0.5%

- **Agricultural weather station**

Measure item	Measure range	Resolution	Accuracy
Wind speed	0-45m/s	0.1m/s	±（0.3±0.03V）m/s
Wind direction	0-360º	1°	±3°
Atmospheric temperature	-50-+100℃	0.1℃	±0.5℃
Atmospheric humidity	0-100%RH	0.1%RH	±3%
Atmospheric pressure	10-1100hPa	0.1hpa	±0.3hPa
Solar radiation	0-2000W/m^2	1W/m^2	±5%
PAR sensor	0-2500μ*mol*m^2*s	1μ*mol*m^2*s	±1%
Rainfall	0-8mm/min	0.2mm	±4%
Soil temperature	-50-+80℃	0.1℃	±0.5℃
Soil moisture	0-100%	1%	±3%

CO_2(optional)	0-5000ppm	1ppm	±3%
Soil PH(optional)	0-14PH	0.1PH	±0.1PH
Soil salinity(optional)	0-15000mg/L	1mg/L	±5%
Soil EC(optional)	0-20mS/cm	0.1mS/cm	±5%

- **Greenhouse comprehensive monitoring station**

Measure item	Measure range	Resolution	Accuracy
Atmospheric temperature	-50-+100℃	0.1℃	±0.5℃
Atmospheric humidity	0-100%RH	0.1%RH	±3%
Atmospheric pressure	10-1100hPa	0.1hpa	±0.3hPa
CO_2	0-5000ppm	1ppm	±3%
Illuminance	0-200000lux	1lux	±7%
Soil temperature	-50-+80℃	0.1℃	±0.5℃
Soil moisture	0-100%	1%	±3%
Solar radiation(optional)	0-2000W/m^2	1W/m^2	±5%
PAR sensor(optional)	0-250μ*mol*m^2*s	1μ*mol*m^2*s	±1%
Soil PH(optional)	0-14PH	0.1PH	±0.1PH
Soil salinity(optional)	0-15000mg/L	1mg/L	±5%
Soil EC(optional)	0-20mS/cm	0.01mS/cm	±5%

- **Scenic area weather station**

Measure item	Measure range	Resolution	Accuracy
Wind speed	0-45m/s	0.1m/s	±（0.3±0.03V）m/s
Wind direction	0-360º	1°	±3°
Atmospheric temperature	-50-+100℃	0.1℃	±0.5℃
Atmospheric humidity	0-100%RH	0.1%RH	±3%
Atmospheric pressure	10-1100hPa	0.1hpa	±0.3hPa
Rainfall	0-8mm/min	0.2mm	±4%
Uv radiation	0-200W/m^2	1W/m^2	±5%
Ground temperature	-50-+80℃	0.1℃	±0.5℃

Notice:

1.The measurement items can be increased or deleted in the table;

2.Measured data is automatically recorded and stored for download analysis;

3.If there are other functional requirements, we can provide customized solutions.

DATA LOGGER SPECIFICATION

Item	Details
LCD	192 * 64
Internal storage	12M (If set to store every 1 hours can store data for more than 4 years; If set to store every 10 minutes can store data for approx. 1 years; If set to store every 1 minute can store data for 30 days)
External storage	Use special U disk to store data (optional function)
Data interface	RS232, RS485, USB
Communication mode	Ethernet(add RS232 to ethernet converter); GPRS(add RS232 to GPRS converter),data flow consumption: <100MB/month WIFI(add RS232 to WIFI converter)
Communication protocol	MODBUS-RTU(Open communication protocol, the user can convenient for secondary development)
Supply	12VDC, AC110V, AC220V, solar power supply system optional
Record interval	1min-240min adjustable
Input parameter	16 max.
Power consumption	<2W
Operating temperature	-40-+75℃
Weight(unpacked)	3.2kg
Dimension	310*218*120mm
Shell material	RK600-02:ABS(Installed in protective box,protective box is optional) RK600-02B:Aluminum alloy(outdoor use directly)
Meteorological monitoring software	Use to display, analysis and storage data on the PC

Guidelines for the Selection of Data logger:

If solar power supply is needed, RK600-02 is recommended, data logger, solar controller and battery can be installed in protective box.

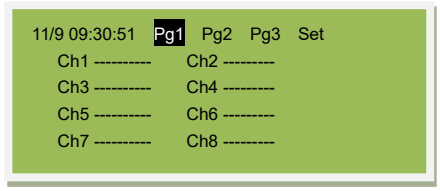
KEY INSTRUCTION

KEY	Function	KEY	Function
▲	Up	+	Value increases
▼	Down	—	Value decreases
◀	Left / Shift to the previous interface	OK	Enter the menu
▶	Right / Shift to the after interface	Esc	Exit menu

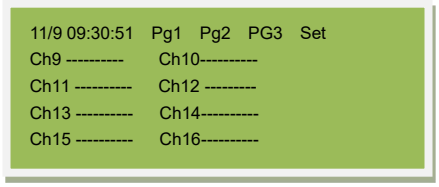
PARAMETER SETTINGS

Item	Function
Version	View data logger software version number
Time settings	Set data logger system clock
Other settings	Set electronic compass (optional function)
Communication settings	Set data logger address(0-255,RS232/RS485 communication）
Reset	After reset all parameters must be reset and clear the history data
Time interval	Set the data storage time interval(1-240min)
Language settings	Chinese/English
External storage	External storage type(U disk/No,If no external storage, set to no)

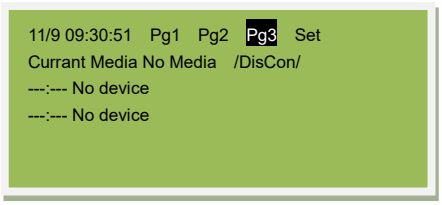
INTERFACE DESCRIPTION



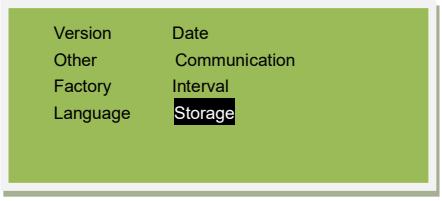
[Interface 1]:
1-8channel sensor indication



[Interface 2]:
9-16channel sensor indication



[Interface 3]
External memory state



[Interface 4]
Parameter settings

COMMUNICATION MODE

- The AWS can communicate with the center workstation(meteorological monitoring software installed) by RS232 or RS485.
  If the communication distance is less than 20m, RS232 communication is recommended;
  if communication distance is within 20 to 800m, RS485 communication is recommended.
- GPRS wireless communication, when cable routing is inconvenient, data can be transferred by GPRS wireless communication, the center workstation can network with several RK900-01 AWS.
- LAN access, RK900-01 AWS is worked as a LAN node communication in the local network by transferring the RS232 with a LAN module. This mode can work under the network interface, the AWS can connect with the computer host directly.

METEOROLOGICAL MONITORING SOFTWARE INSTRUCTIONS

Meteorological Monitoring software is installed on the PC can be stored, download real-time, historical data, and through computer analysis of the meteorological data of the weather station passed,and has data transfinite alarm function.

Real-time data: instantaneous meteorological data for the current computer time.

Historical data: an automatic weather station records to the data collection instrument memory chips (collection instrument clock) acquisition cycle in accordance with the set.

- **Install**

  Install the software on the computer

- **Run**

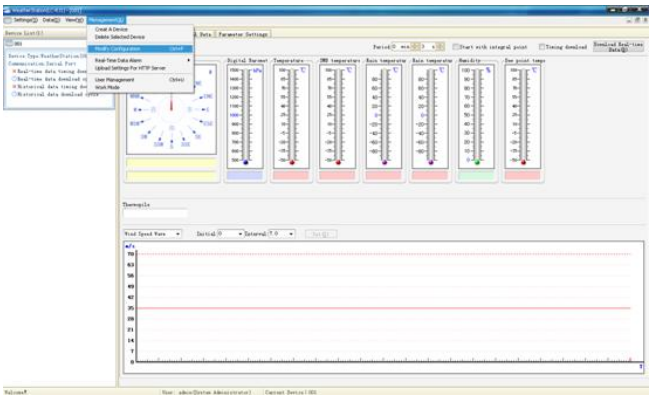
  Double-click the icon to run Software

- **Initial configuration**

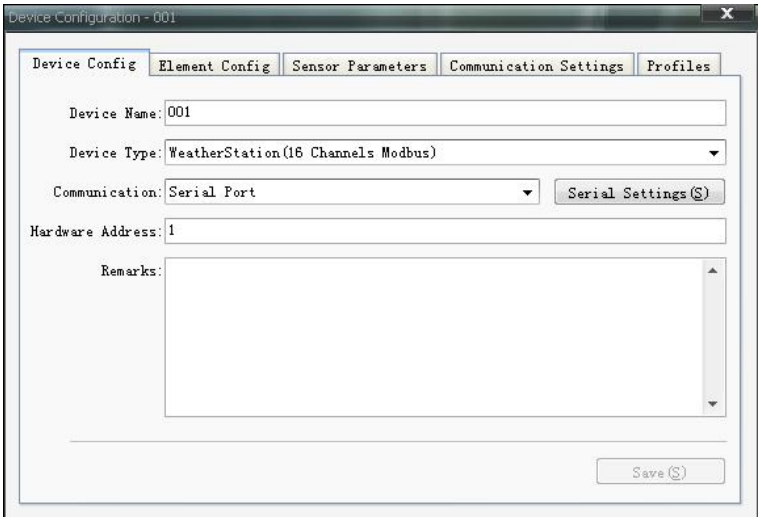
After the software is installed, the software is the default setting. Users can set the software according to the type of hardware collection instrument, only the software settings and hardware consistent to be able to properly communicate with the acquisition instrument.

There are two methods to set-up software. One is directly modify the relevant settings in the software, and another is loaded from a configuration file. The following describes the latter method:

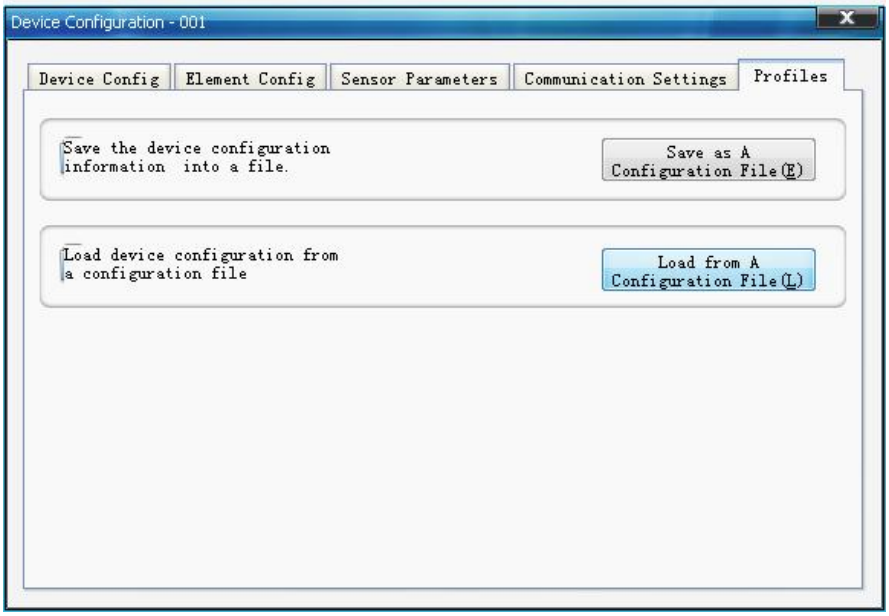
1. Start the software. It need to load the configuration of the device, click "Administrator Configuration" menu under "modify configuration "submenu in the left side of the device list:



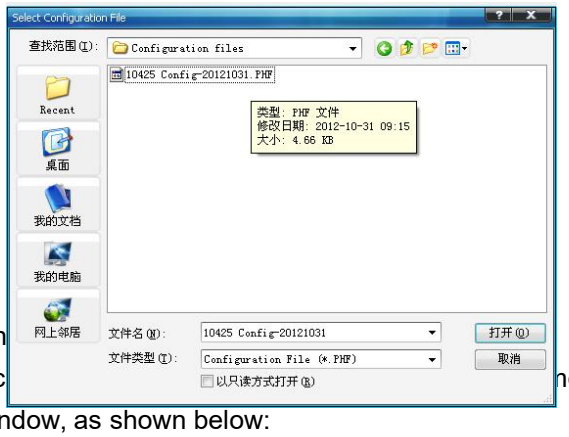
Pop-up configuration window:



2.Enter the "Profile" page, click on the "loaded from a configuration file" button:



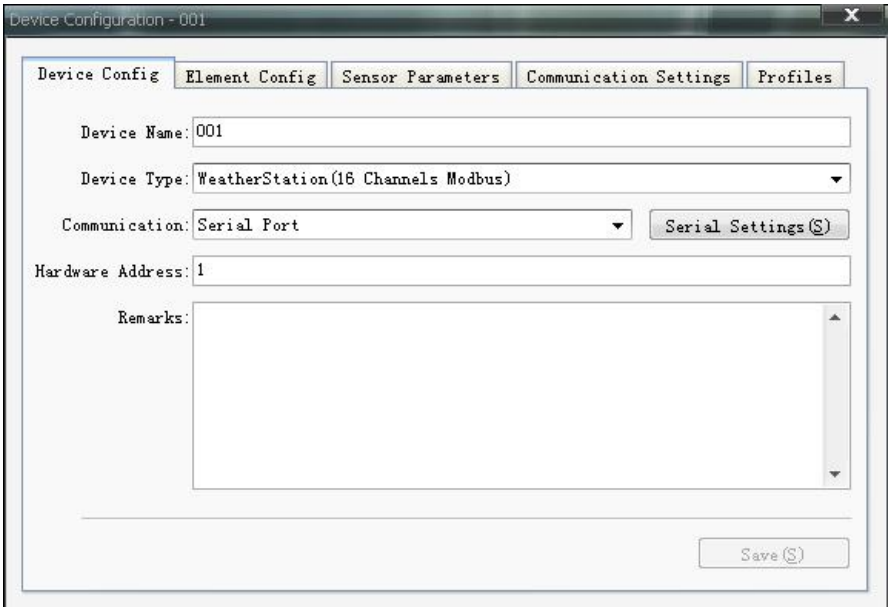
3.Select a configuration file , and then click "Open" Button：



4．Modify the device con

The actual situation of eac ne of the basic configuration.

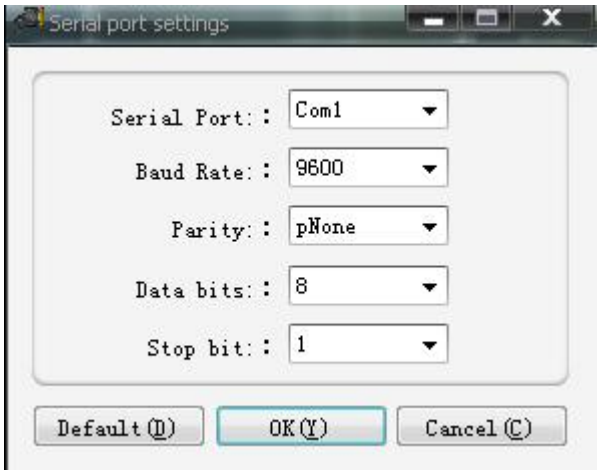
Open the configuration window, as shown below:



Hardware address

Acquisition Instrument Address.

Serial port settings window



Serial number

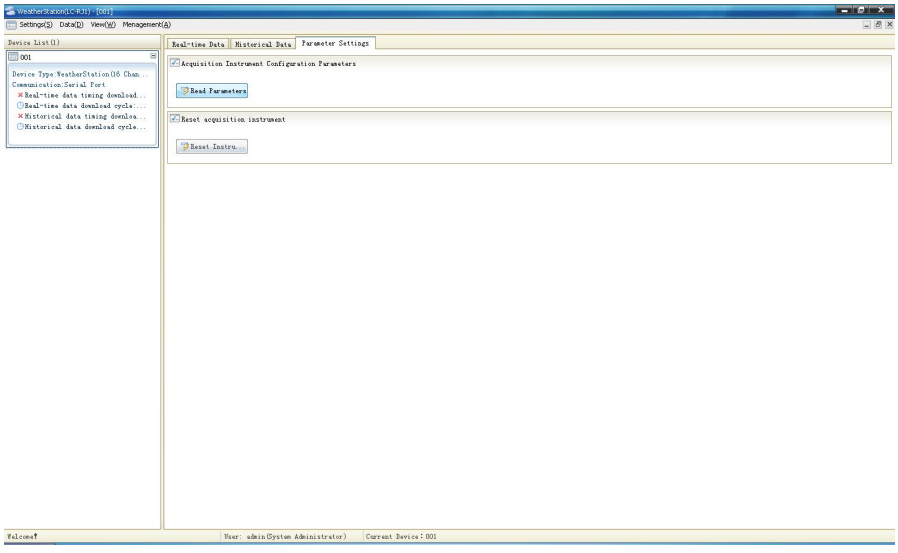
Acquisition Instrument with a computer connected to the serial port number.

Save the settings

Choose to save the settings, set to take effect.

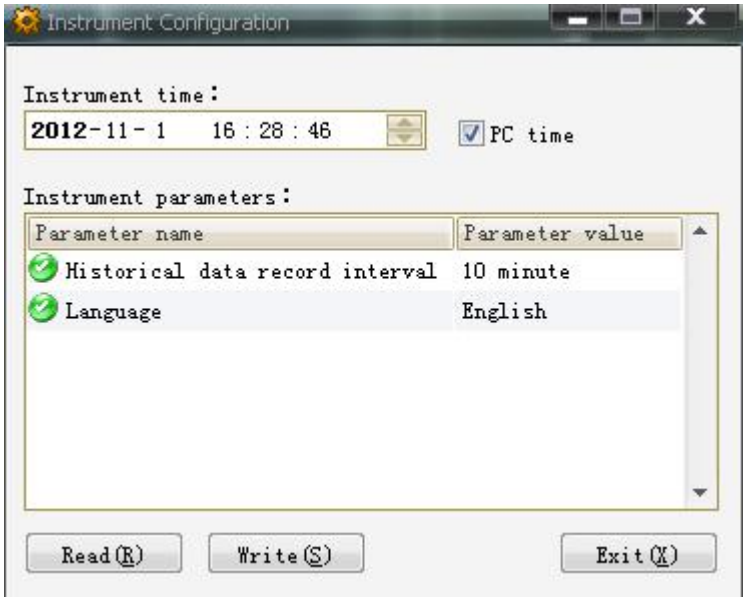
- **Acquisition instrument parameter setting**

As shown below, enter "the acquisition instrument set parameters page, click on the" read parameter "button: acquisition instrument configuration parameters window pops up:



Language setting window

In language settings window, users can set the system's language, There are Chinese and English, the two languages to choose from.



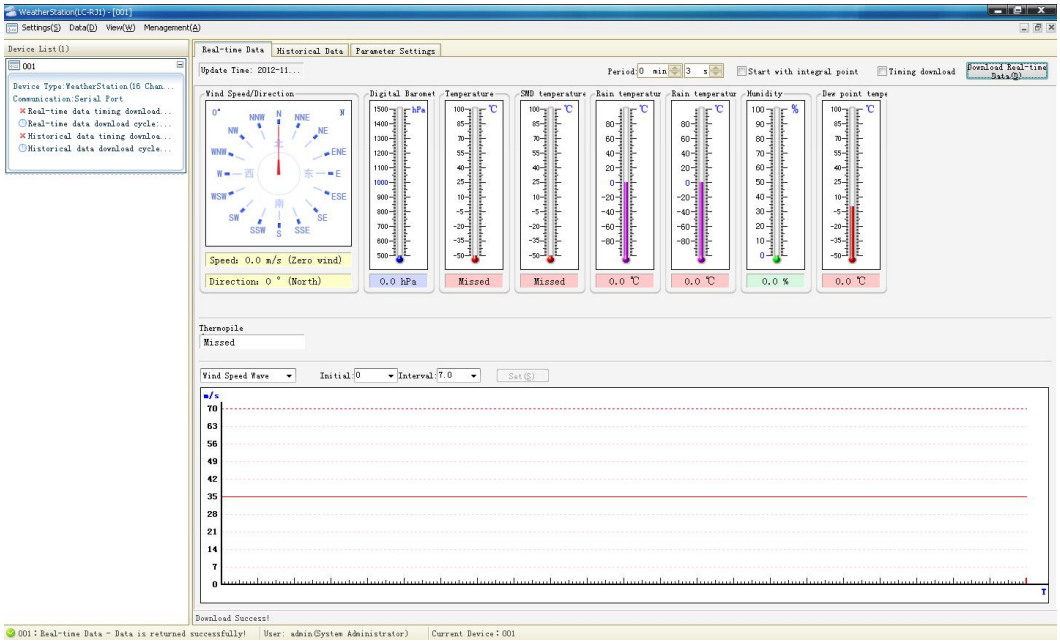
Save the settings

Choose to save the settings, set to take effect.

- **Data Query**

Real-time data window

In real-time data window can download to view real-time weather station data; data and can be stored in the database.



Download real-time data

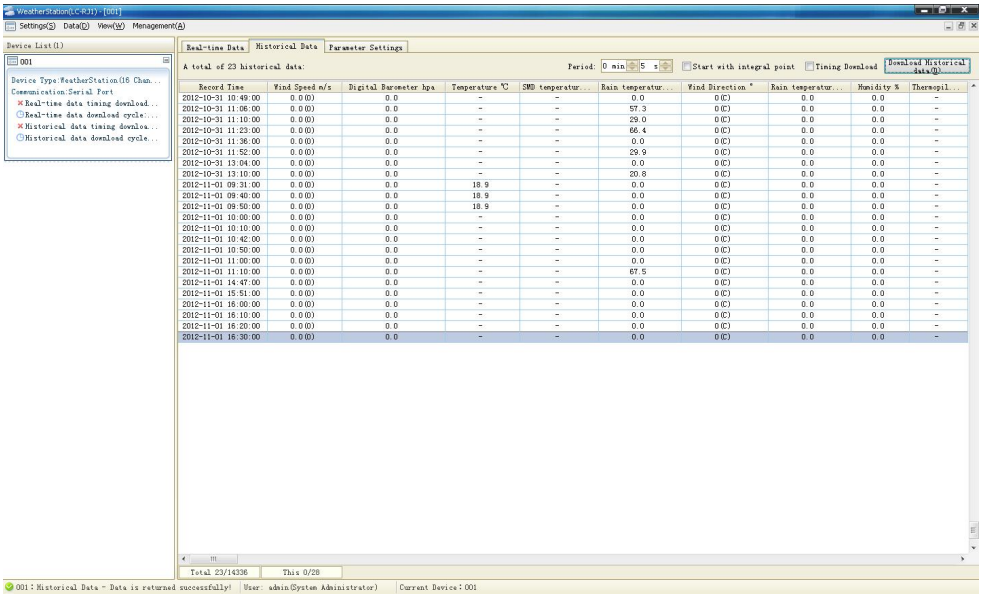
Select refresh data manually download a meteorological data.

Periodically refresh

If you need to automatically download data from time to time, set a timer refresh cycle and select refresh timer can automatically download data in accordance with the set cycle.

Historical data window

Users can download weather station storage of historical data in historical data window view; data and can be stored in the database.



Download Data

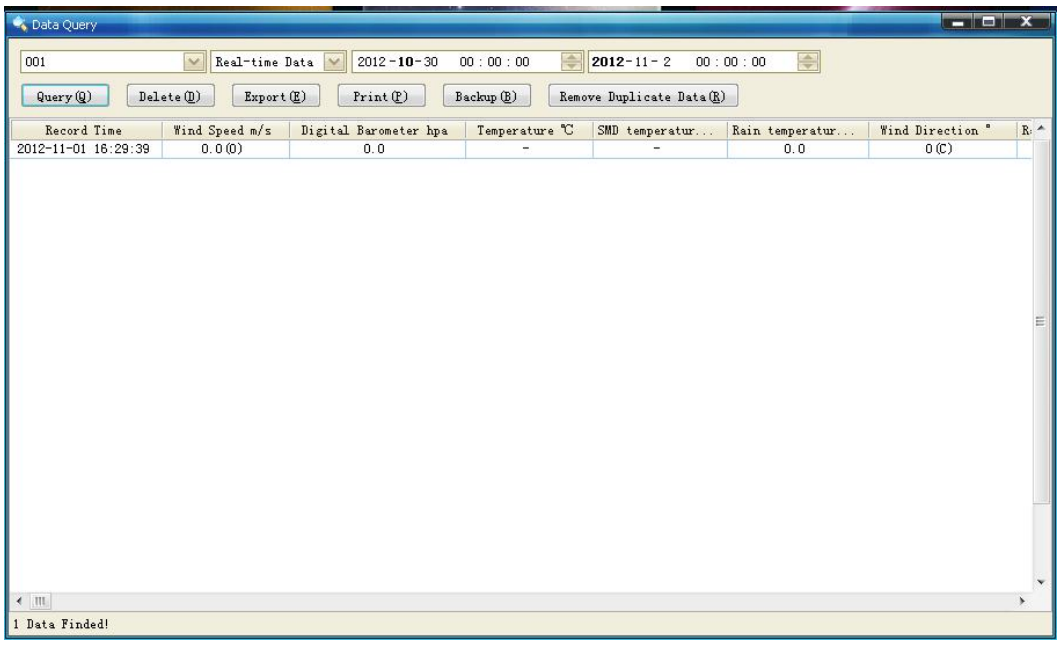
Select refresh data manually download a meteorological data.

Periodically refresh

If you need to automatically download data from time to time, set a timer refresh cycle and select refresh timer can automatically download data in accordance with the set cycle.

Data Query

Click the "data query" sub-menu under the menu of "data processing", "Data Query menu pops up:



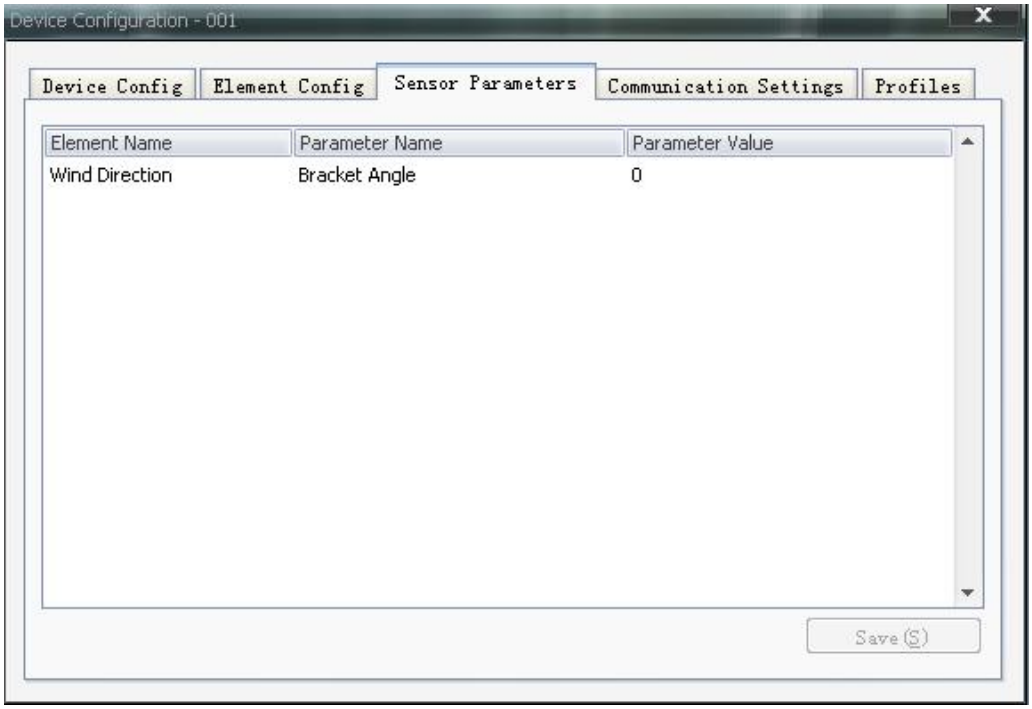
Set the query, click the Query (Q) "button, the query results will be displayed on the lower side of the list; Click "delete (D)" button, the list displayed in the data will be deleted from the database;

Click "Export (E) button to save the list to a file;
Click on the "print (P)" button to print the list displayed data;
Click on the "data backup (B)" button backup list.

- **Sensor configuration parameters**

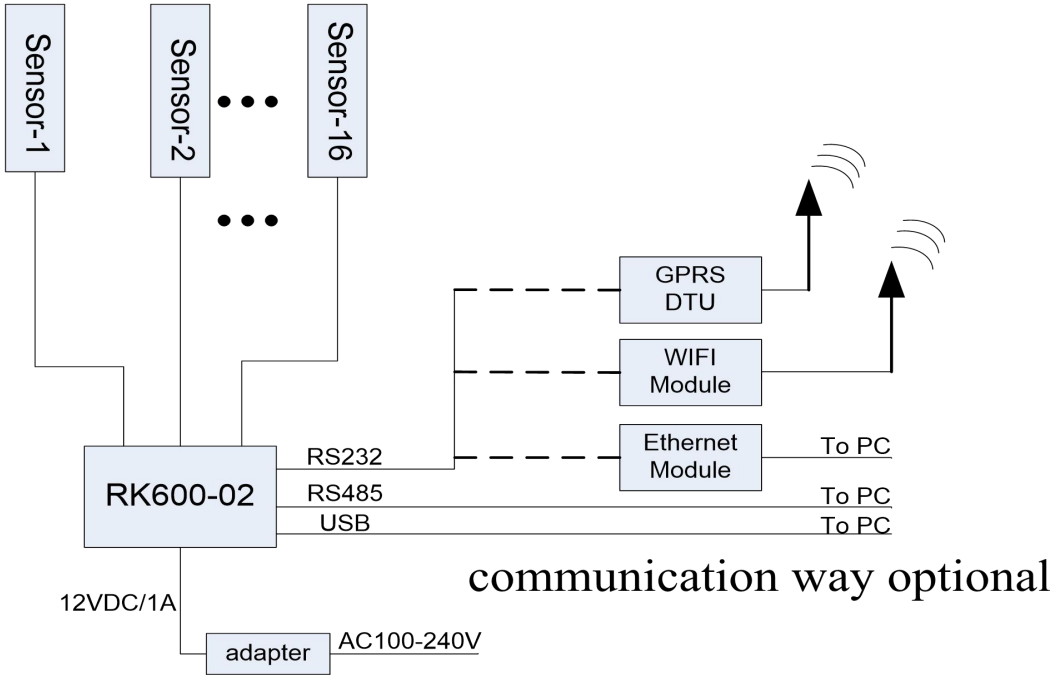
Wind Bracket angle

Due to the north is set for "zero degree", the greater the angle more to the "clockwise" direction, the angle of a maximum of 359 °;
Due to the installation of the wind direction sensor's deviation, which makes the acquisition instrument panel on wind direction readings and the actual value is slightly inconsistent. In order to improve the Winds accuracy, we need data collected Winds correction processing performed, the specific method is as follows:
After installing the bracket, the wind direction sensor pointing due north (zero degree), read the wind the acquisition instrument panel on reading: x °
Wind the bracket angle V has a value of: V = 360 - x °
Click "administrator configures modify the device configuration" menu under "sub-menu, pop-up configuration window, enter the" sensor parameters "page:

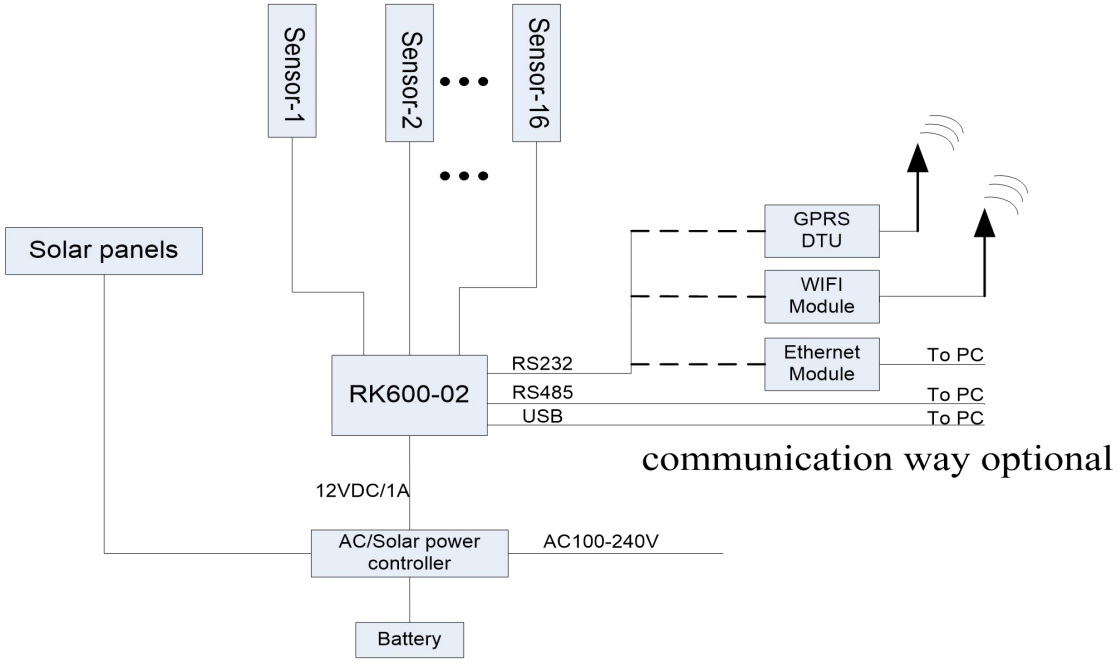


Wind Bracket angle V above, resulting in wind direction sensor bracket angle "Enter, click the" Save the bracket angle "button to save your settings.

SYSTEM CONNECTION DIAGRAM



AC100-240V/DC12V supply



AC100-240V & solar power supply

CE Complies with applicable CE directives.
Specifications subject to change without notice. Version 3.0

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